WHAT IS CLAIMED IS:

1. A method of routing packets in a system, comprising:

receiving a plurality of packets, each packet including a routing label and a packet type;

routing each packet to a destination within the system specified in the routing label in response to the packet type being indicative of a data packet; and

routing each packet to a processor within the system and sending a reply packet to a sender specified in the routing label in response to the packet type being indicative of a control packet.

2. The method, as set forth in claim 1, wherein routing each packet to a destination comprises routing each packet to the destination specified by shelf and slot numbers of the destination included in the routing label.

3. The method, as set forth in claim 1, wherein routing each packet to a destination comprises routing each packet to the destination specified by a shelf identifier, a slot identifier, a link identifier, and a channel identifier included in the routing label for transporting the packet.

4. The method, as set forth in claim 1, wherein sending the reply packet to a sender comprises routing the reply packet to the sender specified by shelf and slot numbers of the sender included in the routing label.

5. The method, as set forth in claim 1, wherein sending the reply packet to a sender comprises routing the reply packet to the sender specified by a shelf identifier, a slot identifier, a link identifier, and a channel identifier included in the routing label for transporting the reply packet.

6. The method, as set forth in claim 1, wherein routing each packet to a destination comprises:

receiving each packet at a switch; and

switching each packet to the destination coupled to a predetermined port of the switch as specified by shelf and slot numbers of the destination included in the routing label.

7. The method, as set forth in claim 1, wherein routing each packet to a destination comprises:

receiving each packet at a switch; and

routing each packet to the destination coupled to a predetermined port of the switch as specified by a shelf identifier, a slot identifier, a link identifier, and a channel identifier included in the routing label for transporting the packet.

8. The method, as set forth in claim 1, wherein routing each packet to a processor and sending the reply packet to a sender comprises:

receiving each packet at a switch;

switching the packet to a predetermined port of the switch coupled to the processor; and

switching the reply packet to the sender coupled to a second predetermined port of the switch specified by shelf and slot numbers of the sender included in the routing label.

9. The method, as set forth in claim 1, wherein routing each packet to a processor and sending the reply packet to a sender comprises:

receiving each packet at a switch;

switching the packet to a predetermined port of the switch coupled to the processor; and

switching the reply packet to the sender coupled to a second predetermined port of the switch specified by a shelf identifier, a slot identifier, a link identifier, and a channel identifier included in the routing label for transporting the reply packet.

10. A method of routing packets internally within a telecommunication system, comprising:

receiving a packet including a routing label and a packet type;

routing the packet to a destination within the system specified in the routing label in response to the packet type being indicative of a data packet; and

routing the packet to a processor within the system and sending a reply packet to a sender specified in the routing label in response to the packet type being indicative of a control packet.

11. The method, as set forth in claim 10, further comprising pushing the routing label onto a label information table stack after receiving the packet.

12. The method, as set forth in claim 11, further comprising popping the routing label onto the label information table stack after receiving the packet at the destination within the system.

13. The method, as set forth in claim 11, further comprising popping the routing label from the label information table stack after receiving the packet at the processor within the system.

14. The method, as set forth in claim 10, wherein routing a packet to a destination comprises routing each packet to the destination specified by shelf and slot numbers of the destination included in the routing label.

15. The method, as set forth in claim 10, wherein routing a packet to a destination comprises routing each packet to the destination specified by a shelf identifier, a slot identifier, a link identifier, and a channel identifier included in the routing label for transporting the packet.

16. The method, as set forth in claim 10, wherein sending the reply packet to a sender comprises routing the reply packet to the sender specified by shelf and slot numbers of the sender included in the routing label.

17. The method, as set forth in claim 10, wherein sending the reply packet to a sender comprises routing the reply packet to the sender specified by a shelf identifier, a slot identifier, a link identifier, and a channel identifier included in the routing label for transporting the reply packet.

18. The method, as set forth in claim 10, wherein routing a packet to a destination comprises:

receiving the packet at a switch; and

switching the packet to the destination coupled to a predetermined port of the switch as specified by shelf and slot numbers of the destination included in the routing label.

19. The method, as set forth in claim 10, wherein routing a packet to a destination comprises:

receiving the packet at a switch; and

switching the packet to the destination coupled to a predetermined port of the switch as specified by a shelf identifier, a slot identifier, a link identifier, and a channel identifier included in the routing label for transporting the packet.

20. The method, as set forth in claim 10, wherein routing a packet to a processor and sending the reply packet to a sender comprises:

receiving the packet at a switch;

switching the packet to a predetermined port of the switch coupled to the processor; and

switching the reply packet to the sender coupled to a second predetermined port of the switch specified by shelf and slot identifiers of the sender included in the routing label.

21. The method, as set forth in claim 10, wherein routing a packet to a processor and sending the reply packet to a sender comprises:

receiving the packet at a switch;

switching the packet to a predetermined port of the switch coupled to the processor; and

switching the reply packet to the sender coupled to a second predetermined port of the switch specified by a shelf identifier, a slot identifier, a link identifier, and a channel identifier included in the routing label for transporting the reply packet.

22. A method of routing packets internally within a network node, comprising:

receiving a packet including a routing label;

routing the packet to a destination within the system specified by a shelf identifier, a slot identifier and a link identifier in the routing label in response to the packet being a data packet; and

routing the packet to a processor within the system and sending a reply packet to a sender specified by a shelf identifier, a slot identifier and a link identifier in the routing label in response to the packet being a control packet.

23. The method, as set forth in claim 22, further comprising pushing the routing label onto a label information table stack after receiving the packet.

24. The method, as set forth in claim 23, further comprising:

accessing the routing label in the label information table stack; and

popping the routing label from the label information table stack after receiving the packet at the destination within the system.

25. The method, as set forth in claim 23, further comprising popping the routing label from the label information table stack after receiving the packet at the processor within the system.

26. The method, as set forth in claim 22, wherein routing a packet to a destination further comprises routing each packet to the destination further specified by a channel identifier included in the routing label for transporting the packet.

27. The method, as set forth in claim 22, wherein sending the reply packet to a sender comprises routing the reply packet to the sender specified by a channel identifier included in the routing label for transporting the reply packet.

28. The method, as set forth in claim 22, wherein routing a packet to a destination comprises:

receiving the packet at a switch; and

switching the packet to the destination coupled to a predetermined port of the switch as specified by the shelf, slot and link identifiers of the destination included in the routing label.

29. The method, as set forth in claim 22, wherein routing a packet to a destination comprises:

receiving the packet at a switch; and

switching the packet to the destination coupled to a predetermined port of the switch as specified by the shelf identifier, slot identifier, link identifier, and a channel identifier included in the routing label for transporting the packet.

30. The method, as set forth in claim 22, wherein routing a packet to a processor and sending the reply packet to a sender comprises:

receiving the packet at a switch;

switching the packet to a predetermined port of the switch coupled to the processor; and

switching the reply packet to the sender coupled to a second predetermined port of the switch specified by the shelf, slot and link identifiers of the sender included in the routing label.

31. The method, as set forth in claim 22, wherein routing a packet to a processor and sending the reply packet to a sender comprises:

receiving the packet at a switch;

switching the packet to a predetermined port of the switch coupled to the processor; and

switching the reply packet to the sender coupled to a second predetermined port of the switch specified by the shelf identifier, slot identifier, link identifier, and a channel identifier included in the routing label for transporting the reply packet.